

DR. EDUARD WETTE

THE REFUTATION
OF NUMBER THEORY I

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Theorien kommen und gehen,
Tatsachen bleiben.

R. W. Pohl

Constitution of the canonical system \mathfrak{K}_0
for a finitary interpretation
of intuitionistic 'deduction' by imperative 'derivation'

$$0.1 \longrightarrow k0; \quad 0.2 \quad kw \longrightarrow k'w;$$

$$1.1 \longrightarrow x\xi; \quad 1.2 \quad xw \longrightarrow x'w;$$

$$2.1 \longrightarrow {}_k0; \quad 2.2 \quad {}_kw \longrightarrow {}_k'w; \quad 2.3 \quad xw \longrightarrow {}_kw;$$

$$3.1 \quad {}_kw_1, {}_kw_2 \longrightarrow {}_k{}^w w_1 w_2;$$

$$3.2, 3 \quad {}_kw_1, {}_kw_2, {}_kw_3 \longrightarrow {}_k{}^+ w_1 w_2 w_3, {}_k{}^x w_1 w_2 w_3;$$

$$3.4, 5 \longrightarrow {}_k V, {}_k \wedge;$$

$$3.6, 7, 8 \quad {}_k u_1, {}_k u_2 \longrightarrow {}_k{}^+ u_1 u_2, {}_k{}^\Delta u_1 u_2, {}_k{}^V u_1 u_2;$$

$$3.9, 10 \quad {}_k v, {}_k u \longrightarrow {}_k{}^V v u, {}_k{}^\wedge v u;$$

$$4.1, 2 \quad {}_k w \longrightarrow {}_k{}^\xi w, {}_k{}^\zeta w; \quad 4.3 \quad {}_k vw \longrightarrow {}_k{}^v w;$$

$$4.4, 9, 10 \quad {}_k w \longrightarrow {}_k u 0, {}_k w V, {}_k w \wedge; \quad 4.5 \quad {}_k vw \longrightarrow {}_k{}^v w;$$

$$4.6, 11, 12, 13, 14, 15 \quad {}_k{}^v w_1, {}_k{}^v w_2 \longrightarrow {}_k{}^v{}^+ w_1 w_2, {}_k{}^v{}^- w_1 w_2, {}_k{}^v{}^\Delta w_1 w_2, \\ {}_k{}^v{}^V w_1 w_2, {}_k{}^v{}^\wedge w_1 w_2, {}_k{}^v{}^\zeta w_1 w_2;$$

$$4.7, 8 \quad {}_k{}^v w_1, {}_k{}^v w_2, {}_k{}^v w_3 \longrightarrow {}_k{}^v{}^+ w_1 w_2 w_3, {}_k{}^v{}^x w_1 w_2 w_3;$$

$$4.16, 17 \quad {}_k v, {}_k w \longrightarrow {}_k{}^v{}^V v w, {}_k{}^v{}^\wedge v w;$$

$$5.1 \quad {}_k v, {}_k w \longrightarrow {}_k{}^v v w w; \quad 5.2 \quad {}_k v u, {}_k w \longrightarrow {}_k{}^v v u w u;$$

$$5.3 \quad {}_k{}^v u v_1 u_1 \longrightarrow {}_k{}^v{}^+ u v_1{}^+ u_1;$$

$$5.4, 7, 8, 9 \quad {}_k{}^v u w_1 u_1, {}_k{}^v v w_1 v_1 \longrightarrow {}_k{}^v{}^+ u v w_1{}^+ u_1 v_1, {}_k{}^v{}^- u v w_1{}^+ u_1 v_1, \\ {}_k{}^v{}^\Delta u v w_1{}^\Delta u_1 v_1, {}_k{}^v{}^V u v w_1{}^V u_1 v_1;$$

$$5.5, 6 \quad {}_k{}^v v_1 w w_1, {}_k{}^v v_2 w w_2, {}_k{}^v v_3 w w_3 \longrightarrow {}_k{}^v{}^+ v_1 v_2 v_3 w{}^+ w_1 w_2 w_3, \\ {}_k{}^v{}^x v_1 v_2 v_3 w{}^x w_1 w_2 w_3;$$

$$5.10, 11 \quad {}_k{}^v w_1, {}_k{}^v w, {}_k{}^v w w_1 u_1 \longrightarrow {}_k{}^v{}^V v u w_1{}^V v u_1, {}_k{}^v{}^\wedge v u w_1{}^\wedge v u_1;$$

$$7.1.1,2 \longrightarrow v_2 0 \vee \neg 00, v_2 0 \wedge \neg 00; \quad 7.1.3 \neg_k w_1, \neg_k w_2 \longrightarrow v_2 0 \neg w_1 w_2 \neg w_1 w_2;$$

$$7.1.4,5 \neg_k w_1, \neg_k w_2, \neg_k w_2 \longrightarrow v_2 0 \neg w_1 w_2 w_2 \neg w_1 w_2 w_2, v_2 0 \vee w_1 w_2 w_2 \vee w_1 w_2 w_2;$$

$$7.2.1 v_2 w u u_1 \longrightarrow v' w u u_2; \quad 7.2.2 v' w u u_2 \longrightarrow v' w u \supset \circ u_1;$$

$$7.1.6,8,10 v_2 w u u_1, v' w v v_1 \longrightarrow v_2' w \supset u v \supset u_1 v_1, v_2 w \wedge u v \wedge u_1 v_1, v_2 w \vee u v \vee u_1 v_1;$$

$$7.1.7,9,11 v' w u u_1, v_2 w v v_1 \longrightarrow v_2' w \supset u v \supset u_1 v_1, v_2 w \wedge u v \wedge u_1 v_1, v_2 w \vee u v \vee u_1 v_1;$$

$$7.1.12,13 x v, v_2 w u u_1 \longrightarrow v_2 w \vee v u \vee v u_1, v_2' w \wedge v u \wedge v u_2;$$

$$8.1 \longrightarrow \neg_k 0 \circ; \quad 8.2 \neg_k v, \neg_k w u \longrightarrow \neg_k' w \vee u v;$$

$$4.18,19,20,21 \longrightarrow j \circ \circ, j \circ 0, j \circ \vee, j \circ \wedge; \quad 4.22,23 x w \longrightarrow j \circ w, j w \circ;$$

$$4.24 j w u, j w v \longrightarrow j w \vee u v; \quad 4.25 j u w, j v w \longrightarrow j \vee u v w;$$

$$4.26 j v u_1, j v u_2 \longrightarrow j v \supset u_1 u_2; \quad 4.27,28 x v, v_2 w u u_1 \longrightarrow j v \vee v u_2, j v \wedge v u_1;$$

$$5.12 j \circ u \longrightarrow j \circ u \circ u; \quad 5.13 j v u v_1 u_1, j w u_2 w_1 u_2 \longrightarrow j \vee w u \vee v_1 w_1 u_2;$$

$$5.14 j w v w_1 v_1, j w u w_1 u_1 \longrightarrow j w \supset v u w_1 \supset v_1 u_1;$$

$$9.1 \longrightarrow \neg \circ \circ \circ; \quad 9.2 x v, \neg u \circ w, j v u \longrightarrow \neg u v \circ \vee w v;$$

$$9.3 x v, \neg u_1 u_2 u, j v u_1, j v u_2 \longrightarrow \neg u_1 \vee u_2 v \vee u v;$$

$$9.4 x v, \neg u_1 u_2 u, \neg u_1 v w_2 u_1, j u_1 v w_2, j v u_2 \longrightarrow \neg u_1 \vee u_2 v u;$$

$$10.1 x v, j v u \longrightarrow \neg u v u; \quad 10.2 x v, \neg u_1 v w_2 u, \neg w_1 w_2 w, j u_1 v w_2 \longrightarrow \neg u v w;$$

$$11.1,2 \longrightarrow \neg j \circ \circ, \neg j \circ 0; \quad 11.3 \neg j v w \longrightarrow \neg j v' w; \quad 11.4 x v \longrightarrow \neg j \circ v v;$$

$$11.5 \neg_k' 0 \vee \neg_k' \circ w_1 w_2, \neg j v_1 w_1, \neg j v_2 w_2, \neg v_1 v_2 v \longrightarrow \neg j v \neg w_1 w_2;$$

$$11.6,7 \neg_k' 0 \vee \neg_k' \circ w_1 w_2 w_2, \neg j v_1 w_1, \neg j v_2 w_2, \neg j v_3 w_3, \neg v_1 v_2 u, \neg u v_3 v \longrightarrow \\ \longrightarrow \neg j v \wedge w_1 w_2 w_2, \neg j v \vee w_1 w_2 w_2;$$

$$11.8,9,10 \neg j v_1 u_1, \neg j v_2 u_2, \neg v_1 v_2 v \longrightarrow \neg j v \wedge u_1 u_2, \neg j v \vee u_1 u_2, \neg j v \supset u_2 u_2;$$

$$11.11,12 x v, \neg j v_1 u, \neg v_1 v w \longrightarrow \neg j w \vee v u, \neg j w \wedge v u;$$

$$12.1, 3, 6 \quad \longrightarrow -d^{\perp} \circ \circ - 00 \circ, -d^{\perp} \circ \circ^{\wedge} (00) \circ, -d^{\perp} \circ \circ^{\times} 000 \circ;$$

$$12.2 \quad -d^{\perp} \circ v^{\wedge} w_1 w_2 \circ \longrightarrow -d^{\perp} \circ^{\perp} \circ v^{\wedge} w_1 w_2 \circ^{\wedge} w_1^{\wedge} w_2 \circ;$$

$$12.4 \quad -d^{\perp} \circ v^{\wedge} w_1 0 w_2 \circ \longrightarrow -d^{\perp} \circ^{\perp} \circ v^{\wedge} w_1 0 w_2 \circ^{\wedge} w_1 0^{\wedge} w_2 \circ;$$

$$12.7 \quad -d^{\perp} \circ v^{\times} w_1 0 w_2 \circ \longrightarrow -d^{\perp} \circ^{\perp} \circ v^{\times} w_1 0 w_2 \circ^{\times} w_1 0^{\times} w_2 \circ;$$

$$12.5 \quad -d^{\perp} \circ v^{\wedge} w_1 w_2 w_3 \circ \longrightarrow -d^{\perp} \circ^{\perp} \circ v^{\wedge} w_1 w_2 w_3 \circ^{\wedge} w_1^{\wedge} w_2^{\wedge} w_3 \circ;$$

$$12.8 \quad -d^{\perp} \circ w v^{\times} w_1 w_2 w \circ, -d^{\perp} \circ v_1^{\wedge} w w_1 w_2 \circ \longrightarrow \\ \longrightarrow -d^{\perp} \circ^{\perp} w v^{\times} w_1 w_2 w \circ^{\perp} \circ v_1^{\wedge} w w_1 w_2 \circ^{\times} w_1^{\wedge} w_2^{\wedge} w_3 \circ^{\perp};$$

$$13.1 \quad -d u \longrightarrow d u; \quad 13.9 \quad d^{\perp} u_1 u_2 u w \longrightarrow d^{\perp} \circ^{\perp} u_1 u_2 u w \supseteq \circ w \circ;$$

$$13.2, 3 \quad U_0 w u u_1, U w v v_1, d^{\perp} u_2 u_2 u_1 w_1, d^{\perp} v_2 v_2 v_1 w_2 \longrightarrow \\ \longrightarrow d^{\perp} \circ^{\perp} u_2 u_2 u_1 w_1^{\perp} v_2 v_2 v_1 w_2^{\wedge} u_1 v_1 \circ, d^{\perp} \circ^{\perp} v_2 v_2 v_1 w_2^{\perp} u_2 u_2 u_1 w_1^{\wedge} v_1 u_1 \circ;$$

$$13.4, 6 \quad U_0 w u u_1, U w v v_1, \neg \circ v_1, d^{\perp} u_2 u_2 u_1 w_1 \longrightarrow d^{\perp} \circ^{\perp} u_2 u_2 u_1 w_1 \vee u_1 v_1 \circ, \\ , d^{\perp} \circ^{\perp} u_2 u_2 u_1 w_1 \vee v_1 u_1 \circ;$$

$$13.5, 7 \quad U_0 w u u_1, U w v v_1, \neg \circ u_2, d^{\perp} v_2 v_2 v_1 w_2 \longrightarrow d^{\perp} \circ^{\perp} v_2 v_2 v_1 w_2 \vee v_1 u_1 \circ, \\ , d^{\perp} \circ^{\perp} v_2 v_2 v_1 w_2 \vee u_1 v_1 \circ;$$

$$13.8 \quad U_0 w u u_1, \neg \circ^{\vee} v u_1, k w_1, \exists v u_1 w_1 u_2, d^{\perp} v_1 v_2 u_2 w_2 \longrightarrow d^{\perp} \circ^{\perp} v_1 v_2 u_2 w_2 \vee v u_1 w_1;$$

$$13.10 \quad D^{\angle} w_1 w_2 w_3, U_0 w w_3 \supseteq v u, \neg \circ v_1 \supseteq v u, \circ^{\wedge} k v_3 v_1, \circ^{\wedge} k v_3 u_1, \neg \circ u_1, \\ , \exists v_1 \supseteq v u u_1 \supseteq v_2 u_2 \longrightarrow d^{\perp} \angle w_1 w_2 w_3 \circ \supseteq v_2 u_2 u_1;$$

$$13.11 \quad d^{\perp} u_1 u_2 \supseteq \circ u w \longrightarrow d^{\perp} \circ^{\perp} u_1 u_2 \supseteq \circ u w \circ \circ \circ;$$

$$13.12 \quad d^{\perp} u_1 u_2 \supseteq v u w, d^{\perp} v_1 v_2 v w_2 \longrightarrow d^{\perp} \circ^{\perp} u_1 u_2 \supseteq v u w^{\perp} v_1 v_2 v w_2 u \circ;$$

$$13.13 \quad d^{\perp} v_1 v_2^{\wedge} v u w, k w_1, \exists v u w_1 u_2 \longrightarrow d^{\perp} \circ^{\perp} v_1 v_2^{\wedge} v u w \circ u_2 w_1.$$

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